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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,789

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Soo Jin Chua

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Hultquist IP

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EXAMINER

FRITCHMAN, REBECCA M

ART UNIT

PAPER NUMBER

1777

MAIL DATE

DELIVERY MODE

12/13/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/594,789

Applicant(s)

CHUA ET AL.

Examiner

REBECCA M. FRITCHMAN

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1777

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 37,38,40,41 and 43-72 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 37,38,40,41 and 43-72 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-943)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

***Detailed Action
Summary***

This is a Non- Final Office action based on the 10/594789 application attorney response filed 04/11/2011.

Claims 37-38, 40-41, & 43-72 are pending and have been fully considered.

Claims 1-36, 39, 42, 63 and 66 have been cancelled.

Claim Rejections - 35 USC § 102

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. **Claims 37, 38, 40, 43, 45- 47, 49, 50-54, & 70-71 are rejected under U.S.C. 102(a) as being anticipated by GRAFF in PCT/US03/13235(as cited on IDS dated 01/15/2007).**

With respect to Claims 37, 49, 68, 70, & 71, GRAFF et al. teach of a multi-layer barrier coating on a flexible substrate which comprises alternating polymer and inorganic layers (abstract). Specifically, GRAFF et al. teach of and electrically conductive sensing element (OLED or light emitting polymer=conductive polymer(0049), which decompose rapidly upon exposure to gas-oxygen- and liquids)(paragraph 0003, Fig 1B, 50), two electrodes(Fig 1B, 52 & 54) electrically connected to the sensing element, a base substrate supporting the sensing element(Fig 1 B, 12), and a liner layer disposed between the sensing element and the base substrate comprising an organic polymer or inorganic polymer(PET)(paragraph 0005, Fig 1 B, 20 & 30). GRAFF et al. also teach of calculation of oxygen (gas) permeability paragraph 0004 & 0005).

With respect to Claim 38, GRAFF et al. teach of signal evaluation (display) (paragraph 0004).

With respect to Claim 40, GRAFF et al. teach of the oxygen-sensitive material being (paragraph 0004).

With respect to Claims 43 & 45, GRAFF et al. teach of the electrode being a metal (tin) oxide (paragraph 0004).

With respect to Claims 46 & 47, GRAFF et al. teach of the substrate being a polymeric material (PET) (0004).

With respect to Claim 50, GRAFF et al. teach of the barrier layer being metal oxides (paragraph 0016).

With respect to Claims 51, 52, & 53, GRAFF et al. teach of the electrodes(52 & 54) being located on a surface of the substrate & being spaced apart thereby forming a trench and the sensing element(50) being located in the trench(Figure 1B).

With respect to Claim 54, GRAFF et al. teach of an encapsulation (56) enclosing the sensing element (50) (Figure 1B).

2. **Claims 44, 48, 41, 51-62, 64, 65, 67, 69, & 72 are rejected under U.S.C. 103(a) as being obvious over GRAFF in PCT/US03/13235(as cited on IDS dated 01/15/2007) in view of TAKAHASHI in US 4595485.**

With respect to Claim 44, GRAFF et al. teach of a multi-layer barrier coating on a flexible substrate for an environmentally(oxygen) sensitive device which comprises alternating polymer and inorganic layers (abstract). GRAFF et al. do not specifically

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teach of the electrodes in connection with the device being silver. TAKAHASHI et al. however teach of the electrode being silver (Claim 8). It would have been obvious to one of ordinary skill in the art to use a silver electrode as in TAKAHASHI in the device of GRAFF due to the fact that electrode material selection is specific and must allow oxygen to moved through the substrate (column 7, lines 50-58).

With respect to Claim 41, GRAFF et al. teach of the use of polyester (0014, 0037, & 0051), and also OLED's (paragraph 0046). GRAFF and TAKAHASHI et al. do not teach specifically of the claimed polymers, however, it would be obvious to one of ordinary skill in the art that these are equivalent materials (all conductive polymers).

With respect to Claim 48, TAKHASHI teach of the use of a Silicon based substrate (column 9, lines 24-25).

With respect to Claim 51, TAKAHASHI et al. teach of the electrodes being located on the surface of the substrate (Claims 16 & 31).

With respect to Claim 52, TAKAHASHI et al. teach of the electrodes being spaced apart and therefore forming a trench (Claim 13).

With respect to Claim 53, TAKAHASHI et al. teach of the sensing element being located in the trench (Claims 15 & 16).

With respect to Claim 54, TAKAHASHI et al. teach of a dense coating layer encapsulating the sensing element (Claim 17).

With respect to Claim 55, TAKAHASHI et al. teach of the porous coating comprising polymeric material, silicon compounds (Claim 11).

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With respect to Claim 56, TAKAHASHI et al. teach of a hollow cylindrical base which contains a sensing element (column 10, lines 45-56).

With respect to Claim 57, TAKAHASHI et al. do not teach of the hollow space being filled with inert gas, however, it would be obvious to one of ordinary skill to fill this space with inert gas to prevent complications in the oxygen sensing reaction.

With respect to Claim 58, TAKAHASHI et al. teach that it is commonly known to use a cover over the sensing element (column 1, lines 20-31).

With respect to Claim 59, TAKAHASHI et al. do not teach of the cover substrate comprising glass, aluminum, or copper, however, it would have been obvious to one of ordinary skill in the art to use one of these materials due to the fact that they would be un-reactive.

With respect to Claim 60, TAKAHASHI et al. teach of the whole element being covered by a porous coating as a protective mechanism (column 5, lines 27-41).

With respect to Claim 61, TAKAHASHI et al. teach of the porous coating/protective layer being silicon or aluminum oxide (Claim 11).

With respect to Claim 62, TAKAHASHI et al. teach of the porous coating/protective layer being silicon or aluminum oxide (Claim 11). TAKAHASHI et al. do not teach of the protective coating being a metal fluoride, however, this is an equivalent material to a metal oxide for its use as a protective layer.

With respect to Claims 64, 65, & 67, TAKAHASHI et al. teach of the insulating (liner layer) comprising SiO₂.

With respect to Claim 69, TAKAHASHI et al. teach of the electrodes being located on the surface of the substrate (Claims 16 & 31).

With respect to Claim 72, it would be obvious to one of ordinary skill in the art to measure noise, in order to obtain a clearer signal.

Response to Arguments

Applicant's arguments filed 04/11/2011 have been fully considered but they are not persuasive.

Applicant argues the finality of the action dated 11/24/2011. The examiner maintains that the finality of that action was proper. The applicant amended the independent claim 1 on 09/13/2010 to include subject matter which was not previously claimed. Therefore, the examiner is able to change the grounds of rejection & properly go final.

Applicant argues that the instant invention is drawn towards reacting with oxygen or water while GRAFF is drawn towards prevention of reaction with the environment. The examiner disagrees. The multi layer barrier coating in GRAFF still reacts with environmental agents, but with an improved resistance (so the reaction is diminished) (abstract).

It is also the examiner's understanding that since the liquid crystal display in GRAFF is susceptible to environmental conditions, it can be considered a sensor for measuring the gas permeability.

Applicant also argues that GRAFF does not teach of a conductive polymer. The examiner disagrees. GRAFF et al. teach of OLED or light emitting polymers (0049)

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which in the examiners understanding are conductive polymers since they only emit light when situated between two electrodes and current is passed through. And GRAFF et al teaches that the liquid crystal display (sensor) is made up of such materials (OLED's) and is oxygen/water sensitive, and when contacted with water, the OLED would degrade and not conduct as well (change in conductance).

Also, applicant argues that the modification of GRAFF would change the principle operation of the barrier coating of GRAFF. The examiner disagrees. The examiner is not attempting to change the principle of operation of the device, but merely stating that it functions as a sensor as well. The multi layer barrier coating in GRAFF still reacts with environmental agents, but with and improved resistance (so the reaction is diminished) (abstract). It is also the examiner understands that since the liquid crystal display in GRAFF is susceptible to environmental conditions; it can be considered a sensor for measuring the gas permeability.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBECCA FRITCHMAN whose telephone number is (571)270-5542. The examiner can normally be reached on Monday- Friday 7:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim, Vickie can be reached on 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

R.F.

/KRISHNAN S MENON/

Primary Examiner, Art Unit 1777